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Massage carriage

The invention relates to a massage carriage for use in a
massage chair or similar that can be moved back and forth along
10 a frame in the massage chair or similar, comprising a drive
that contains at least one motor and gearing parts, a first
shaft that can be moved by the drive and a second shaft that
can be moved by the drive, two first arms, which are connected
to the first shaft, can be moved by the first shaft and on each
15 of which a massage element is mounted, and two second arms,
which are connected to the second shaft and can be moved by the
second shaft, one of which each acts on one of the first arms,
such that the massage elements can be moved by the drive with
one movement component oriented parallel to the frame and one
20 oriented perpendicular to the frame, where the drive displays a
single motor with a motor shaft.

Massage carriages of this kind are known in various designs. In
the case of customary use of a massage carriage in the backrest
25 of a massage chair or similar, the two shafts movable by the
drive are arranged horizontally and one above the other, e.g.
the first shaft above the second shaft. As a rule, the two
shafts display eccentric areas at their ends, on which the
first or second arms are mounted. In this context, the
30 eccentric area on the ends of the first shaft can be angled
relative to this shaft, such that, when the first shaft is
rotated, the first arms bearing the massage elements perform a
pivoting movement about an essentially horizontal axis that
passes through the intersection of the first shaft and the
35 angled axis of the eccentric areas. The massaging action

generated by this movement of the massage elements is referred to as "kneading".

5 The movement of the second shaft is such that, via its connection by the second arms to the first arms and the movement of the first arms by the first shaft, an essentially vertical movement of the massage elements is generated, possibly with a component oriented perpendicular to the "kneading" movement. The massage action exerted by this
10 movement is also referred to as "tapping".

To generate the "tapping", the second shaft can, like the first shaft, be provided with eccentric areas on its ends, to which the second arms are connected in articulated fashion. Like the
15 first shaft, the second shaft is then rotated by the drive. Instead of rotation, however, other forms of movement are also open to consideration, especially for the second shaft, being induced by the drive and enabling the "kneading" and "tapping" movements of the massage elements described above.

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Massage carriages of the type mentioned in the opening paragraph are known from DE 94 20 596 U1, US-B1-6,364,850, US-A-6,099,487 and US-A-5,052,376. On these massage carriages, the first and second shafts for moving the first and second arms
25 with the attached massage elements are driven by the drive pinion emerging from one face end of the motor, via a transmission unit with different reduction ratios. The drive comprising the respective motor unit and transmission unit has a relatively large space requirement, such that the back part
30 of a chair or other item of furniture accommodating the massage carriage has to be dimensioned accordingly. Correspondingly large openings have to be provided in the corresponding back part or other item of furniture for installation of the massage carriage with a drive of this kind.

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The object of the present invention is to develop a massage carriage of the kind mentioned in the opening paragraph in such a way that the drive is designed to be compact, particularly flat, in which context it can easily be installed in the back part of a massage chair or other item of furniture without elaborate measures.

According to the invention, the object is solved in that, in a massage carriage of the kind mentioned in the opening paragraph, the motor shaft displays two shaft sections, arranged on opposite face ends of the motor and lying on one axis, where the first shaft can be moved by means of the one shaft section via a reduction gear, and the second shaft by means of the other shaft section via a reduction gear.

The movement of the shafts can consist in a rotary movement, where eccentric sections are preferably provided on the ends of the shafts for articulated connection of the arms. The second shaft, in particular, can, however, also be moved in two or three dimensions without proper rotation, in order to set the massage elements into "kneading" and "tapping" motion via the first and second arms together with the movement of the first shaft.

The drive, comprising the motor and the reduction gears located on its opposite face ends, can be of relatively compact, particularly flat, design. The massage carriage with the built-in drive thus requires relatively little space in the backrest of a massage chair or other item of furniture equipped with a massage carriage, and can be inserted into the item of furniture through smaller openings, e.g. on the underside of the backrest of a massage chair.

In a particularly simple and cost-saving embodiment of the massage carriage according to the invention, the shaft sections

can be sections of a continuous motor shaft.

In this context, the reduction gear via which the second shaft can be moved is provided with a free-wheel device in a particular sense of rotation of the motor shaft. In this sense of rotation, the first shaft is driven by the motor, whereas the second shaft does not rotate because of the free-wheel device. The movement transmitted to the massage elements thus corresponds exclusively to the "kneading" movement.

In this embodiment, both the first and the second shaft are driven when the motor shaft is turned in the other sense of rotation by the reversible motor. At the same rpm speed of the motor as when only the first shaft is driven, the "tapping" movement caused by operation of the second arms is superimposed on the "kneading" movement caused by the first arms, such that the massaging action corresponds to "foulage" (= kneading plus tapping). At twice the rpm speed of the motor, or even faster, the "tapping" movement of the massage elements predominates. In this way, selection of the sense of rotation and the rpm speed of the continuous shaft makes it possible to set "kneading" or simultaneous "kneading" and "tapping", and to simulate "tapping".